

IMPACT OF VIRTUAL ENVIRONMENTS ON SENSORIMOTOR COORDINATION AND USER SAFETY

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One critical unresolved issue related to the safe use of virtual environments (VEs) is maladaptive sensorimotor coordination following exposure to VEs. Moving visual displays used in VEs, especially in the absence of concordant vestibular signals leads to adaptive responses during VE exposure, but maladaptive responses following return to the normal environment. In the current set of investigations, we examined the effect of HMD and dome VE displays on eye-head-hand coordination, gaze holding and postural equilibrium. Subjects (61) performed a navigation and a “pick and place” task. Further, we compared 30 min and 60 min exposures across 3 days (each separated by 1 day). A subset of these results will be presented. In general, we found significant decrements in all three measures following exposure to the VEs. In addition, we found that these disturbances generally recovered within 1-2 hrs and decreased across days. These findings suggest the need for post-VE monitoring of sensorimotor coordination and for developing a set of recommendations for users concerning activities that are safe to engage in following use of a VE.